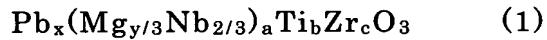


Claims:

1. A method for producing a piezoelectric element comprising the steps of:

superposing a piezoelectric material made of a piezoelectric ceramic composition containing a $\text{PbMg}_{1/3}\text{Nb}_{2/3}\text{O}_3\text{-PbZrO}_3\text{-PbTiO}_3$ ternary system solid solution composition represented by the following general formula (1) as a main component and 0.05 to 10.0 mass% of NiO on a ceramic substrate or on an electrode formed on the ceramic substrate, and

subjecting the superposed piezoelectric material to a thermal treatment in an atmosphere where 0.03 – 0.5 mg/cm³ (NiO conversion amount per unit volume of a space in a container) of an atmosphere-controlling material having the same composition as the piezoelectric material is coexisted



wherein $0.95 \leq x \leq 1.05$; $0.8 \leq y \leq 1.0$; a, b and c are decimals falling in a range surrounded by (a,b,c) = (0.550, 0.425, 0.025), (0.550, 0.325, 0.125), (0.375, 0.325, 0.300), (0.100, 0.425, 0.475), (0.100, 0.475, 0.425) and (0.375, 0.425, 0.200), in the coordinates with coordinate axes of said a, b and c, and $a+b+c = 1.00$.

2. A method for producing a piezoelectric element comprising the steps of:

superposing a piezoelectric material made of a piezoelectric ceramic composition containing a $\text{PbMg}_{1/3}\text{Nb}_{2/3}\text{O}_3\text{-PbZrO}_3\text{-PbTiO}_3$

ternary system solid solution composition represented by the following general formula (1) as a main component and 0.05 to 10.0 mass% of NiO on a ceramic substrate or on an electrode formed on the ceramic substrate, and

subjecting the superposed piezoelectric material to a thermal treatment in an atmosphere;

wherein 0.03 – 0.5 mg/cm³ (NiO conversion amount per unit volume of a space in a container) of an atmosphere-controlling material having the same composition as the piezoelectric material is coexisted as a container for housing said electrode on which the piezoelectric material is superposed and a setter for mounting the piezoelectric material thereon



wherein $0.95 \leq x \leq 1.05$; $0.8 \leq y \leq 1.0$; a, b and c are decimals falling in a range surrounded by (a,b,c) = (0.550, 0.425, 0.025), (0.550, 0.325, 0.125), (0.375, 0.325, 0.300), (0.100, 0.425, 0.475), (0.100, 0.475, 0.425) and (0.375, 0.425, 0.200), in the coordinates with coordinate axes of said a, b and c, and $a+b+c = 1.00$.